



Survey of Bio-Medical Waste Disposal System in Some Hospitals of Amravati City

S.K. TIPPAT¹, AND A.U. PACHKHADE²

¹Department of Environmental Science, Arts, Commerce and Science College, Kiran
Nagar, Amravati. 444606 (M.S.), India

²Department of Botany BrijlalBiyani Science College, Amravati.

Corresponding author: sachintippat2@Rediffmail.com.

Abstract

Medical care is vital for our life, health and well being. But the waste generated from medical activities can be hazardous, toxic and even lethal because of their high potential for diseases transmission. Proper disposal or treatment of BMW is compulsory and obvious for the related sources. Present investigation studied the overall status of BMW generated in some major hospitals of Amravati city. As per the survey and dialogues with related authorities it was observed that, the city hospital concerns aware about the toxicity as well as the immediate need of its disposal. However, because of unavailability of proper infrastructure and supervision, there is significant lacuna in the BMW management. The major hospitals send their BMW to the common waste treatment plant. However there is not any regular checking methodology over the others.

Key Words: Biomedical Waste, Hospital, Disposal, Eco Save System

Introduction

Amravati is fast growing city of Maharashtra state having a good health care facilities. There are 16 Municipal Corporation dispensaries and 12 Urban Health Post (UHP) existing in the city. In addition to these there are 161 private hospitals and 4 Government hospitals in the city. Health care facilities in Amravati region is of about 11200 beds generating about 2237 kg. of Bio-Medical Waste per day. The waste generation is estimated based on rate of 0.125 kg/day/bed as per the estimates given by the common facility operators. However, the actual BMW generation will definitely more and varies depending on the type of hospital, level of hospital automation. Bio-Medical waste is “Any waste which, is generated during the diagnosis, treatment or immunization of human beings or animals or in any research activities pertaining thereto or in the production or testing of biologicals”. Medical care is vital for our life, health and well being. However, the waste generated from medical activities can be hazardous, toxic and even lethal because of their high potential of diseases transmission. With the course of time the waste is increasing in its amount and type due to advances in scientific knowledge and has an impact on human lives (Rao and Garg, 1994).



The rag pickers and waste workers are often worst affected, because unknowingly, they rummage through all kinds of poisonous material while trying to collect items which they can sell for reuse. At the same time, this kind of illegal and unethical reuse can be extremely dangerous and even fatal. Diseases like cholera, plague, tuberculosis, hepatitis (especially HBV), AIDS (HIV), diphtheria etc. in either epidemic or even endemic form, pose serious public health risks (Hem Chandra 1991). According to UEAP, (2005) dumping of healthcare waste in uncontrolled areas can have a direct environmental effect by contaminating soils and underground water. They also point out that improper incineration can pollute nearby air. The work of Rutal and Mayhill, (1992) reveals that waste generated during healthcare can disturb the health of outside environment as well as health care establishment. Therefore with a proper regime of segregation at source, the problem can be reduced proportionately. Similarly, with better planning and management, not only the waste generation is reduced, but overall expenditure on waste management can be controlled.

The rules framed by the Ministry of Environment and Forests (MoEF), Govt. of India, known as 'Bio-medical Waste (Management and Handling Rules, 1998),' notified on 20th July 1998, provides uniform guidelines and code of practice for the whole nation. It is clearly mentioned in this rule that the 'occupier' of an institution generating bio-medical waste shall be responsible for taking necessary steps to ensure that such waste is handled without any adverse effect to human health and the environment.

Present investigation tried to evaluate the present status and ongoing bio-medical waste management practices in some major hospitals of Amravati city. It was also aimed to create awareness about hospital accreditation with focus on guidelines related to health care safety issues related with disposal of bio-medical waste.

Materials and Methods

The present investigation was carried out during the 2012 for the fulfillment of post graduate project. The selected hospitals for the study were General District Hospital, Panjabrao Deshmukh Hospital and Medical College, Vidarbha Ayurved Hospital and Mahavidyalaya, Navajivan Hospital, Hi-Tech Multispecialty and research Centre, Shri Krishna Hospital. In the primary stage of the investigation exploration of all the selected hospitals were made with respect to the average per day patients admitted; number of beds present; average per day waste generation and management system of biomedical waste.

In the second phase of investigation the common bio-medical waste disposal and management plant (Global Eco Save System) at Durgapur was explored with respect to average per day incoming bio-medical waste, classification and separation of biomedical waste as well as different disposal and management mechanism.



The questionnaire was prepared for collecting information about the bio-medical waste generation, classification, storage, disposal, safety measures and transportation. Finally various management approaches and co-ordination regarding to the bio-medical waste were also examined at hospital level.

Observations and Results

The comparative observations from surveyed hospitals revealed that all the hospitals generate both degradable and non-degradable bio-medical waste. They collect daily bio-medical waste and stored in plastic bins. All surveyed hospital managements are very much aware about management and disposal of bio-medical waste. Three from the selected six hospitals (District General Hospital, PanjabraoDeshmukh Hospital and Medical College, VidarbhaAyurvedic Hospital and Mahavidyalaya) have trained staff who are handling bio-medical waste and provide treatment procedure to workers related to collecting and handling of waste. All the hospitals provide personal protective equipments such as gloves, apron, mask etc. to their workers. All the surveyed hospitals had labeled collection container with color coding (Red, Black Yellow) system for collection of different types of wastes, according to the nature. Every hospital has claimed that they transported their waste with proper labeling and segregation through labeled containers to the central storage system. No one has autoclaving or other methods of waste sterilization Regarding liquid wastes; all the selected hospitals were not found serious. Every hospital discharges their waste water directly into the sewer system. Quantitative account of waste water discharge per day is not in their record. All the hospitals take daily report on sanitation work without any site observation.

The average waste generated per day in each studied hospitals were found to be 60 kg in District General Hospital, 95 kg in PanjabraoDeshmukh Medical College, 10 kg in Hi-Tech Multispecialty & Research Centre, 4 kg in Shri Krishna Hospital, 5 kg in VidarbhaAyurvedMahavidyalaya, 16 kg in Navajivan Hospital respectively (Fig. 1).

The common bio-medical waste treatment and disposal plant located at Durgapur was established under the guidance of Global Eco Save System. It was observed that the peoples which are directly involved in disposal and treatment procedure were not undergone any proper training program. They collect bio-medical waste from 4 districts of Vidarbha. About 2000-3000 kg waste transported to the plant daily from all major hospitals of Vidarbha to the plant site. All the collected waste very first segregated according to the norms at the plant site. The plastic waste is transported for the recycling where as, the human and sharpen waste were subjected to incineration. For the incineration there was separate department. Incineration was carried out at 800⁰Cto 1150⁰C. The resultant ash latter dumped into the landfill area. The liquid waste generated was subjected for treatment. It was observed that the onsite workers related to segregation, incineration and dumping warred mask, glows and apron. The plant authority carried out their monthly medical checkup which includes blood count, HIV test, and skin related tests. There were

not any prescribed environmental assessment mechanism as well as auditing. Nuisance of odor is prominently observed over throughout the plant.

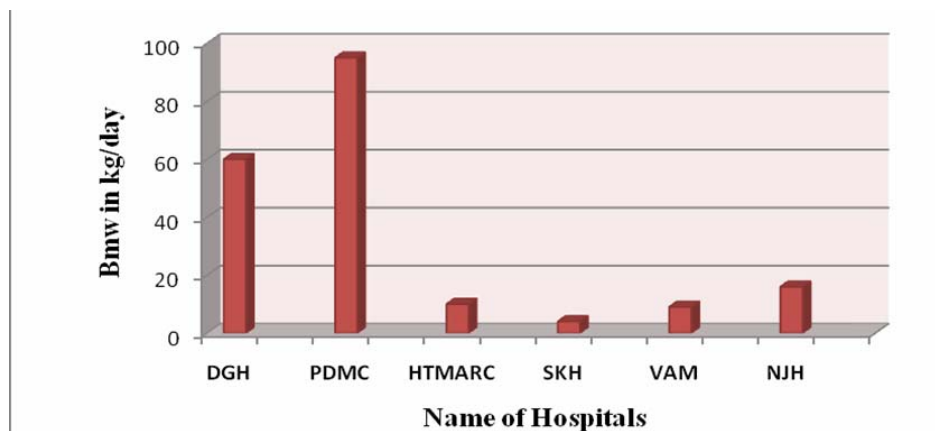


Fig. 1: Average waste generated per day in selected six hospitals of Amravati city.



Colour Coding containers for the collection of hospital Waste at P.D.M.C.



Dumping of Hospital Waste dumped along with Domestic waste (P.D.M.C.)



Hospital waste stored in colour polythene bags (Irvin Hospital)



Disposal of liquid waste in municipal sewer system (Irvin Hospital)



Questioner Filling at P.D.M.C. Hospital



Questioner Filling at Irvin Hospital.

Discussion and Conclusion

As per the observations and report of six hospitals of Amravati city it is concluded that all the hospitals generating bio-medical waste. It includes hazardous waste in the form of solid and liquid. Not a single hospital from Amravati city has its own treatment and disposal mechanism. Similar observations were also made by Murthy *et al.*, (2010) in the major hospital of Mysore city. All the hospitals hand over their bio-medical waste to the common treatment plant situated at Durgapur, 12 km. away from the city. It was also observed that there is leakage of waste during the collection and transportation from source level to the target.

The staff of the District General Hospital (Irvine) is trained to handle the waste but in private hospitals the staff is not aware about the training. The transport and disposal facilities of solid waste are not up to the mark even in government hospitals. For liquid waste there is no proper record about the quantity of waste generated and their discharging measures. It is directly discharge in sewer system in most of the hospitals. According to Dwivediet *al.*, (2009) the status of liquid waste in most of the hospital from India is not at the mark. There is neither attempt to minimize the quantity of waste generation nor any mechanism to decrease the toxicity of the waste. There is no any provision by the management to have any innovations, equipments in the future to treat the waste generation at the source level.

At the central disposal and management plant there is facility of accumulation and segregation particularly of solid waste through colored and labeled containers. There is no facility of collection and treatment of liquid waste. The plastic waste is also transported to the other stations for recycling. The staff



of the central plant is not properly educated but the authority said that they are working through proper training program.

Thus it is cleared that in Amravati city there is no any efficient management of hospital waste is in existence. The rules and regulations regarding to the bio-medical waste is no adequately followed. The government as well as private hospitals are not interested in proper management and disposal of their waste in accordance to the environmental rules.

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